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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,220	07/12/2001	Yurong Shi	TT4869	5200

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EXAMINER	
KOSOWSKI, ALEXANDER J	
ART UNIT	**PAPER NUMBER**
2125	11

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

P29

Office Action Summary	Application No.	Applicant(s)
	09/905,220	SHI ET AL.
	Examiner	**Art Unit**
	Alexander J Kosowski	2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 28 July 2003 .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,4-7,9-12 and 14-31 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,4-7,9-12 and 14-31 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 July 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1) Claims 1-31 are presented for examination in light of the amendment filed 7/28/03. Claims 2-3, 8 and 13 have been canceled. This is a second non-final rejection.

Claim Rejections - 35 USC § 103

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3) Claims 1, 4-7, 9-12 and 14-31 are rejected under 35 U.S.C. 103(a) as being unpatentable by Nulman (U.S. Pat 6,303,395), further in view of Stoddard et al (U.S. Pat 6,587,744).

Referring to claim 1, Nulman discloses a method comprising the steps of entering semiconductor process parameters into a statistical process control system and configuring an equipment interface, using the statistical process control system, to collect the semiconductor process parameters (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the MES environment contains a metrology controller, which collects semiconductor process parameters for the SPC system). However, Nulman does not explicitly teach receiving a request from an equipment interface for a data collection plan, nor that configuring includes providing the data collection plan to the equipment interface.

Stoddard teaches a method of manufacturing semiconductor devices which includes the use of metrology tools whereby a request from an equipment interface is received for a data collection plan, and whereby an equipment interface is configured by providing the data collection plan to the equipment interface (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a request from an equipment interface for a data collection plan and to provide the data collection plan to the equipment interface in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 4, Nulman discloses a statistical process control system (col. 6 lines 56-60) whereby process parameters are entered (col. 8 lines 5-8). However, Nulman does not disclose the step of selecting entering parameters includes referencing a data collection capability specification.

Stoddard teaches a method whereby a data collection specification is accessible (col. 5 lines 40-55).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a data collection specification in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 5, Nulman discloses measuring a process parameter on a semiconductor wafer, and providing the process parameter to the statistical process control system through the equipment interface (col. 8 lines 5-8 and col. 9 lines 29-31). However,

Nulman does not explicitly teach that the process parameter is measured in accordance with a data collection plan.

Stoddard teaches a method whereby a data collection plan may be utilized for measuring process parameters (col. 5 lines 40-55).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a data collection plan in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 6, Nulman discloses that the step of measuring includes providing a trigger to a metrology tool from a manufacturing execution system (col. 7 lines 53-67 and col. 8 lines 1-14, whereby the MES encompasses the metrology controller, which triggers metrology tools to collect process parameters).

Referring to claim 7, Nulman discloses a method comprising the steps of establishing a data collection plan using a statistical process control system, the data collection plan identifying data to collect from a semiconductor tool (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the metrology controller must request information from the various metrology tools, and whereby the controller must be programmed for data collection parameters such as a desired sampling frequency, etc.), and providing the data collection plan to an equipment interface of the semiconductor tool through the statistical process control system (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the MES environment contains a metrology controller, which collects semiconductor process parameters for the SPC system). However, Nulman does not explicitly

teach receiving a request from an equipment interface to receive a data collection plan, nor that the data collection plan is provided to an equipment interface in response to receiving the request from the equipment interface.

Stoddard teaches a method of manufacturing semiconductor devices which includes the use of metrology tools whereby a request from an equipment interface is received for a data collection plan, and whereby an equipment interface is configured by providing the data collection plan to the equipment interface (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a request from an equipment interface for a data collection plan and to provide the data collection plan to the equipment interface in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 9, Nulman discloses a statistical process control system (col. 6 lines 56-60). However, Nulman does not explicitly teach that the step of establishing includes referencing a data collection capability specification.

Stoddard teaches referencing a data collection capability specification (col. 5 lines 40-55).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to reference a data collection capability specification in the method taught by Nulman since this would allow a user to define the number of wafers and process measurement locations

and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 10, Nulman does not explicitly teach the step of performing a measurement consistent with a data collection plan.

Stoddard teaches the use of a data collection plan for measurements (col. 5 lines 40-55).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to perform a measurement consistent with a data collection plan in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 11, Nulman discloses that the step of performing a measurement includes providing a trigger to a metrology tool from a manufacturing execution system (col. 7 lines 53-67 and col. 8 lines 1-14, whereby the MES encompasses the metrology controller, which triggers metrology tools to collect process parameters).

Referring to claims 12 and 14-16, the claims vary from claims 7 and 9-11 only in that they claim a computer readable medium tangibly embodying a program of instructions, rather than a method. The method taught by Nulman could inherently be applied to a computer readable medium tangibly embodying a program of instructions. Therefore, referring to claims 12 and 14-16, see rejection of claims 7 and 9-11, respectively, above.

Referring to claim 17, Nulman discloses a system which receives a process control strategy (col. 8 lines 49-53) comprising a communications port to configure an equipment interface of a semiconductor tool to collect measurement data from the semiconductor tool and a communications port to obtain measurement data from the equipment interface (col. 7 lines 53-67 and col. 8 lines 1-14, whereby all aspects of the system may communicate with each other), a data broker to receive the measurement data from the communications port and provide the measurement data to a statistical process client (col. 8 lines 55-61), and a statistical process client to evaluate the measurement data in accordance with the process control strategy (col. 10 lines 1-19). However, Nulman does not explicitly teach a user interface to receive a capability specification identifying a data collection capability of a semiconductor tool, nor to receive a data collection plan, the data collection plan used in conjunction with the capability specification to identify data to be collected from a semiconductor tool.

Stoddard teaches a system for manufacturing semiconductor devices which includes a user interface (col. 2 lines 36-41) and which also includes receiving a data collection plan and a capability specification and using them to identify data to be collected (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a user interface to receive a capability specification identifying a data collection capability of a semiconductor tool and to receive a data collection plan to be used in conjunction with the capability specification to identify data to be collected from a semiconductor tool in the system taught by Nulman since this would allow a user to define the number of wafers and process measurement locations and define more specific names for the

metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claims 18 and 19, Nulman discloses a communications port to provide control signals to a manufacturing execution system, whereby the control signals are provided by the statistical process client in response to an evaluation of the measurement data (col. 7 lines 53-67 and col. 8 lines 1-14 and col. 10 lines 19-38).

Referring to claim 20, Nulman does not explicitly teach a user interface which is a graphical user interface.

Stoddard teaches the use of a graphical user interface (col. 2 lines 36-41, whereby graphics are displayed on the user interface).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a graphical user interface in the invention taught by Nulman since this would allow a user to interactively select performance models in a semiconductor processing system (Stoddard, col. 2 lines 36-41).

Referring to claim 21, Nulman discloses an Internet interface (col. 9 lines 54-57).

Referring to claims 22-23, Nulman discloses a data history client wherein the data broker provides the measurement data to the data history client and wherein the data history client provides the measurement data to a non-volatile storage medium (col. 9 lines 51-53).

Referring to claim 24, Nulman discloses a method utilizing a statistical process control system comprising the steps of configuring an equipment interface, using the statistical process control system, to collect measurement data from a semiconductor tool and obtaining measurement data from the semiconductor tool (col. 8 lines 5-8 and col. 9 lines 29-31, whereby

the MES environment contains a metrology controller, which collects semiconductor process parameters for the SPC system), providing the measurement data to a statistical process control system through a data broker, the statistical process client being part of the statistical process control system (col. 8 lines 55-61), receiving a process control strategy at the statistical process control system and evaluating the measurement data in accordance with the process control strategy using the statistical process control client (col. 10 lines 1-19). However, Nulman does not explicitly teach receiving a capability specification identifying a data collection capability of a semiconductor tool, nor receiving a data collection plan at the statistical process control system, the data collection plan used in conjunction with the capability specification to identify datat to be collected from a semiconductor tool.

Stoddard teaches a method for manufacturing semiconductor devices which includes receiving a data collection plan and a capability specification and using them to identify data to be collected from a tool (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a capability specification identifying a data collection capability of a semiconductor tool and to receive a data collection plan to be used in conjunction with the capability specification to identify data to be collected from a semiconductor tool in the method taught by Nulman since this would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 25, Nulman discloses the step of verifying the process control strategy, wherein the verifying is performed using the statistical process control system (col. 8 lines 5-8 and col. 9 lines 29-31, whereby the metrology controller must request information from the various metrology tools, and whereby the controller must be programmed for data collection parameters such as a desired sampling frequency, etc., and could inherently verify that the current strategy is consistent). However, Nulman does not explicitly teach comparing the process control strategy to a data collection plan.

Stoddard teaches a method for manufacturing semiconductor devices which includes receiving a data collection plan.

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to receive a data collection plan in the method taught by Nulman since this would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 26, Nulman does not disclose that the step of configuring includes providing a data collection plan to the equipment interface.

Stoddard teaches a method whereby a data collection plan is provided to an equipment interface (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a data collection plan to the equipment interface in the method taught by Nulman since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points

(Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 27, Nulman does not disclose that the data collection plan is provided in response to a request from the equipment interface.

Stoddard teaches a method whereby an equipment interface may request a data collection plan (col. 5 lines 40-55 and col. 18 lines 51-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to provide a data collection plan in response to a request from an equipment interface since a data collection plan would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Referring to claim 28, Nulman discloses that the step of obtaining includes providing a trigger to the semiconductor tool from a manufacturing execution system (col. 7 lines 53-67 and col. 8 lines 1-14, whereby the MES encompasses the metrology controller, which triggers metrology tools to collect process parameters).

Referring to claims 29-31, Nulman discloses the use of an Internet interface (col. 9 lines 54-57). However, Nulman does not explicitly teach that the capability specification, the data collection plan and the process control strategy are received via a common user interface, nor that the user interface is a graphical user interface.

Stoddard teaches a method utilizing a common graphical user interface (col. 2 lines 36-44, whereby graphical models are received and displayed) whereby capability specification, data

collection plans and process control strategies are received (col. 5 lines 40-55 and col. 18 lines 40-57).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to utilize a common graphical user interface to received capability specifications, data collection plans, and process control strategies in the method taught by Nulman since a graphical user interface would allow a user to interactively select performance models in a semiconductor processing system (Stoddard, col. 2 lines 36-41) and since a capability specification, data collection plan and process control strategy would allow a user to define the number of wafers and process measurement locations and define more specific names for the metrology points (Stoddard, col. 5 lines 50-55), which would help to streamline and organize the process of collecting semiconductor process parameters.

Conclusion

4) The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Schulze (U.S. PGPUB 2002/0116083) – teaches a system for monitoring a fabrication facility.

Bunkofske (U.S. Pat 6,442,445) – teaches an MES control system.

5) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander J Kosowski whose telephone number is 703-305-3958. The examiner can normally be reached on Monday through Friday, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 703-308-0538. The fax phone numbers for the

organization where this application or proceeding is assigned are 703-746-7239 for regular communications and 703-746-7239 for After Final communications. In addition, the examiner's RightFAX number is 703-746-8370.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Alexander J. Kosowski
Patent Examiner
Art Unit 2125

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